

Appl. No. 10/086,617
Amdt. Dated Nov. 10, 2003
Reply to Office Action of Aug. 13, 2003

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

We Claim:

Claim 1 (currently amended): An optical switch for switching light signals coming from three input fibers among three output fibers, comprising:

a collimator aligning with each of the input and output fibers for collimating input or output light; and

a moveable switching element comprising:

a three-surface mirror having three reflecting surfaces; and

three reflectors, one mounted opposite each reflecting surface of the three-surface mirror, whereby, the switching element is moveable between three different ~~positions~~ positions, and when light signals are transmitting from the input fibers, they transmit directly to a corresponding output fiber, or are reflected between one reflecting surface and one reflector to be output by one of the other two output fibers.

Claim 2 (original): The optical switch as claimed in claim 1, wherein the switching element is able to move into or out of or to rotate within a space surrounded by the collimators.

Claim 3 (original): The optical switch as claimed in claim 2, wherein each one input fiber is opposite to one corresponding output fiber, whereby light beams from each one input fiber can be output by the

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corresponding opposite output fiber when the switching element is in one of its three positions.

Claim 4 (original): The optical switch as claimed in claim 1, further comprising a driver, which drives the switching element to move between its three positions.

Claim 5 (currently amended): An optical switch for switching light signals ~~coming from three input fibers among three output fibers~~, comprising:

a plurality of input optical fibers;

a plurality of output optical fibers;

a collimator aligning with each of the input and output fibers for collimating input or output light; and

a moveable switching element comprising four reflectors, wherein the four reflectors are parallel to each other, whereby light signals from the plurality of input fibers are transmitted to the corresponding output fibers respectively, the switching element is moveable between three different positions, and the light signals of each of the input fibers are transmitted to different of the plurality of output fibers when the switching element is at different of the three positions, and whereby when the light signals are transmitted from the input fibers, they transmit directly to a corresponding output fiber, or are reflected between two of the four reflectors to be output by one of the other two output fibers.

Claim 6 (original): The optical switch as claimed in claim 5, wherein the four reflectors are able to move into or out of or to rotate within a space surrounded by the collimators.

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Claim 7 (currently amended): The optical switch as claimed in ~~claim~~claim 6, wherein one input fiber is aligned with one opposite output fiber, ~~whereby~~and light beams from one input fiber can be output by a corresponding opposite output fiber in each of the three different positions of the switching element.

Claim 8 (currently amended): The optical switch as claimed in claim 5, further comprising a driver, which drives the switching element to move between ~~its~~the three positions.

Claim 9 (currently amended): An optical switch for switching light signals ~~coming from at least two input fibers among at least two output fibers~~, comprising:

at least two input optical fibers;

at least two output optical fibers;

at least two main reflecting surfaces, each main reflecting surface being in an optical path between one of the input fiber~~fibers~~ and one of the output fiber~~fibers~~; and

at least two secondary reflecting surfaces, each secondary reflecting surface being substantially parallel-opposite to one of the main reflecting surfaces to connect an optical path from one of the input optical fiber~~fibers~~ to one of the output optical fiber~~fibers~~, wherein each of the input optical fibers is coupled to a different one of the output optical fibers when the optical switch changes between at least two positions.

Claim 10 (currently amended): The optical switch as claimed in claim 9, wherein light beams from the input fiber are reflected twice off the main reflecting surface.

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Claim 11 (currently amended): The optical switch as claimed in claim 10, wherein light beams from the input fiber ~~reflected~~reflect once off the main reflecting surface, then reflect once off the secondary reflecting surface, then reflect a second time off the main reflecting surface, and then are output by the output fiber.

Claim 12 (currently amended): ~~As a~~ multi-channel optical switch comprising:

plural pairs of input ports and output ports substantially at equal intervals arranged along a circumference surrounding at least a moveable switch therein;

said multi-channel switch providing a plurality of reflecting surfaces; wherein

when no switch is provided, light coming from one input port leaves from the corresponding output port which is aligned with said input port diametrically; when the switch is provided, at least one reflected light coming from at least one input port leaves from the corresponding output port, which is a neighbor of said at least one input port, via at least one reflection on at least one of said reflecting surfaces.

Claim 13 (currently amended): The multi-channel optical switch as claimed in claim 12, wherein there are least three pairs of input ports and output ports evenly arranged along the circumference.

Claim 14 (currently amended): The multi-channel optical switch as claimed in claim 12, wherein the reflected light experiences three ~~times~~ reflectionreflections via said switch before entering the corresponding neighboring output port.

Claim 15 (currently amended): The multi-channel optical switch as claimed in claim 12, wherein the input ports and the output ports are

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alternately arranged along said circumference.

Claim 16 (currently amended): The multi-channel optical switch as claimed in claim 12, wherein all respective lightlights coming from the corresponding input ports ~~are~~is reflected by said switch when said switch is provided.

Claim 17 (currently amended): The multi-channel optical switch as claimed in claim 12, wherein only some respective lightlights coming from the corresponding input ports ~~are~~is reflected by said switch when said switch is provided.